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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,641	10/12/2001	Daniel Xu	INTO-0004-US	2057

7590 08/13/2002
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EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT PAPER NUMBER

2815

DATE MAILED: 08/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory ActionApplication No.
09/976,641

Applicant(s)

Xu et al.

Examiner

B. William Baumeister

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED Jul 31, 2002 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

Therefore, further action by the applicant is required to avoid the abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

THE PERIOD FOR REPLY [check only a) or b)]

- a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.
- b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☐ The proposed amendment(s) will not be entered because:
- (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);
- (b) ☐ they raise the issue of new matter (see NOTE below);
- (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
- (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. ☐ Applicant's reply has overcome the following rejection(s): _____

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because:
see attachment

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the ~~proposed amendment(s)~~ ^{response bwb 8/10/02} a) ☐ will not be entered or b) ☒ will be entered and an explanation of how the ~~new or amended~~ claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____

Claim(s) objected to: _____

Claim(s) rejected: 11-30

Claim(s) withdrawn from consideration: 1-10

8. ☐ The proposed drawing correction filed on _____ is a) ☐ approved or b) ☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

10. ☐ Other: _____

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 7/31/2002 have been fully considered but they are not persuasive.

a. Applicant has argued:

“Ovshinsky discloses nothing but a word line in the substrate that consists entirely of an n+ region. Thus, there is no more lightly doped region around the more heavily doped region, all of which must be in the substrate. For example, the p+ diffusion 24, that the Examiner points to, is not part of the buried word line but is in the epitaxial layer 14. Therefore, it is not in the substrate...” (Reply to Final rejection, pages 1 and 2.)

Applicant appears to be misreading the Examiner's rejection: to reiterate, the semiconductor substrate 10 in combination with the epitaxial layer 14/16 does, in fact, read on the term “substrate” of the claims. As such, the substrate 10/14 includes a buried line (n+ channel 12); a more lightly doped region (n-epi region 14) which is *above* the n+ channel; and a region of a second conductivity type opposite said first conductivity type over said line (p+ region 24) and under said phase change material (36). Thus, as was previously stated, Ovshinsky does, in fact, teach all of the limitations except for the presence of a more lightly doped n region between the n+ channel and the p semiconductor substrate.

Applicant argues that “Chang does not have anything to do with a phase change memory.” The Examiner is not combining the Chang diode memory for any teachings relating to the phase-change portion of the memory. Rather, the Examiner is combining Chang for its teaching of providing a more lightly doped region (n region 38) between the n+ line 32 and the p substrate 20.

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Applicant makes further arguments that Chang provides no teaching nor motivation to provide a more lightly doped n-region between the n+ region and the p+ region of the diode (i.e., *above* the n+ line). The examiner agrees. Chang was not combined to teach an n-region *above* the n+ line; Ovshinsky already teaches this. Rather, Chang was combined with Ovshinsky for Chang's teaching that the substrate leakage current problem can be overcome by providing an n-region *below* the n+ line. Applicant acknowledges that Chang teaches this: "Clearly the whole suggestion of Chang is that his structure solves the leakage problem." Page 2, last full paragraph.

Accordingly, the previous rejections are still deemed to be proper and maintained.

INFORMATION ON HOW TO CONTACT THE USPTO

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

B. William Baumeister
Patent Examiner, Art Unit 2815
August 10, 2002



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